AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated hereafter.

1. (Currently Amended) A method of producing a protein bioarray comprising:
   a) providing a substrate comprising a solid support and a hydrophobic surface modification layer bound to the solid support, the surface modification layer comprising at least a first moiety having the structure —Si—R^1 and a second moiety having the structure
   —Si—L—R^2, wherein R^1 is a chemically inert moiety selected from the group consisting of C_3 to C_{30} alkyl and benzyl optionally substituted with 1 to 5 halogen atoms, L is a linking group, and R^2 is a hydrophilic moiety,
   b) providing at least two solutions, each solution comprising a probe protein, and
   c) depositing the solutions provided in step b) onto discrete sites on the substrate, each solution being deposited onto its own discrete site, ~~said depositing resulting in each probe protein not forming a covalent bond with R^2~~, wherein each probe protein becomes non-covalently attached to the ~~substrate~~ hydrophobic surface modification layer at its respective discrete site via hydrophobic-hydrophobic interactions; and wherein the probe protein is not covalently attached to the R^2 hydrophilic moiety.

2. (Original) The method of claim 1, further comprising drying the substrate after depositing the solutions.

3. (Previously presented) The method of claim 1, further comprising, after step c),
   d) contacting the substrate with a blocking composition comprising a blocking protein, wherein the blocking protein becomes non-covalently attached to the substrate, said contacting resulting in the blocking protein not forming a covalent bond with R^2.

4. (Original) The method of claim 3, wherein the discrete sites are separated by intervening areas, and the blocking protein becomes non-covalently attached to the substrate at the intervening areas and at the discrete sites.

5. (Original) The method of claim 3, wherein the blocking composition comprises a plurality of blocking proteins.

6. (Previously presented) The method of claim 5, wherein the plurality of blocking proteins are selected to reduce non-specific binding of target protein.

7. (Original) The method of claim 1, wherein at least one solution provided in step b) comprises a probe protein that is different from at least one other probe protein in another solution provided in step b).

8. (Original) The method of claim 1, wherein least fifty solutions are provided in step b).

9. (Original) The method of claim 1, wherein least 250 solutions are provided in step b).

10. (Original) The method of claim 1, wherein depositing the solutions comprises using an inkjet apparatus to deliver one or more droplets of each solution to its respective discrete site.

11. (Currently Amended) A protein bioarray comprising

a substrate comprising a solid support and a hydrophobic surface modification layer bound to the solid support, the surface modification layer comprising at least a first moiety having the structure —Si—R^1 and a second moiety having the structure —Si—L—R^2, wherein R^1 is a chemically inert moiety selected from the group consisting of C_3 to C_{30} alkyl and benzyl optionally substituted with 1 to 5 halogen atoms, L is a linking group, and R^2 is a hydrophilic moiety;

a plurality of discrete sites on the substrate, each site having a probe protein bound thereto via non-covalent interaction, wherein said probe protein is not covalently bound to R^2, but wherein each probe protein is non-covalently attached to the ~~R^2 hydrophilic moiety on the substrate~~ hydrophobic surface modification layer via hydrophobic-hydrophobic interactions.

12. (Original) The protein bioarray of claim 11, further comprising intervening areas between the discrete sites.

13. (Original) The protein bioarray of claim 11, further comprising a blocking protein bound to the substrate.

14 (Original) The protein bioarray of claim 11, wherein each discrete site is in the range from 30 to 150 micrometers in diameter.

15 (Original) The protein bioarray of claim 11, wherein the solid support comprises a material selected from glass; fused silica; plastic, polytetrafluoroethylene, polystyrene, polycarbonate, ceramic, titanium dioxide.

16. (Original) The protein bioarray of claim 11, wherein the second moiety comprises from about 0.5% to about 99.5% of the modification layer.

17. (Original) The protein bioarray of claim 11, wherein the second moiety comprises from about 0.5% to about 30% of the modification layer.

18. (Original) The protein bioarray of claim 11, wherein R^2 is selected from hydroxyl, acetyl, carboxyl, amino, amide, methoxyl, ethoxyl, propoxyl, and —$(OCH_2CH_2)_k$—H where k is an integer from 1 to about 10.

19. (Previously presented) The method of claim 1, wherein R^2 is selected from acetyl, carboxyl, amido, methoxyl, ethoxyl, propoxyl, and —$(OCH_2CH_2)_k$—H where k is an integer from 1 to about 10.

20. (Currently Amended) A method of producing a protein bioarray comprising:

a) contacting the surface of a substrate with a derivatizing composition that contains a mixture of silanes, under reaction conditions effective to couple the silanes to the surface of the substrate, thereby providing a substrate comprising a solid support and a hydrophobic surface modification layer bound to the solid support, the surface modification layer comprising at least a first moiety having the structure —Si—R^1 and a second moiety having the structure —Si—L—R^2, wherein R^1 is a chemically inert moiety selected from the group consisting of C_3 to C_{30} alkyl and benzyl optionally substituted with 1 to 5 halogen atoms, L is a linking group, and R^2 is a hydrophilic moiety,

b) providing at least two solutions, each solution comprising a probe protein, and

c) depositing the solutions provided in step b) onto discrete sites on the substrate, each solution being deposited onto its own discrete site, said depositing resulting in each probe protein not forming a covalent bond with R^2, wherein each probe protein becomes non-covalently attached to the ~~substrate~~ hydrophobic surface modification layer at its respective discrete site via hydrophobic-hydrophobic interactions; and wherein the probe protein is not covalently attached to the R^2 hydrophilic moiety.